We Claim:

1. An isolated nucleic acid comprising a nucleotide sequence that encodes a GPR56 polypeptide or an immunologically active derivative thereof.

2. The isolated nucleic acid of claim 1, wherein said nucleic acid encodes a human GPR56 polypeptide.

3. The isolated nucleic acid of claim 1 comprising a nucleotide sequence that is at least 80% identical to SEQ ID NO: 1.

4. The isolated nucleic acid of claim 1 wherein said nucleic acid hybridizes under moderate or high stringency conditions to a sequence that is complementary to SEQ ID NO: 1.

5. The isolated nucleic acid of claim 3 wherein the percentage identity to SEQ ID NO: 1 is at least about 95%.

6. The isolated nucleic acid of claim 3 wherein the percentage identity to SEQ ID NO: 1 is about 99%.

7. The isolated nucleic acid of claim 4 wherein the hybridization comprises a hybridization or wash buffer comprising a parameter selected from the group consisting of:

   (i) a salt concentration that is equivalent to 0.1xSSC-0.2xSSC buffer or lower salt concentration;

   (ii) a detergent concentration equivalent to 0.1% (w/v) SDS or higher; and

   (iii) an incubation temperature of about 45°C to 65°C or higher.

8. A gene construct comprising the isolated nucleic acid of claim 1 in operable connection with a promoter sequence.

9. An isolated nucleic acid comprising a nucleotide sequence selected from the group consisting of:

(i) the nucleotide sequence set forth in SEQ ID NO: 1;

(ii) nucleotide residues 163 to 2241 of SEQ ID NO: 1;

(iii) a nucleotide sequence that encodes the amino acid sequence set forth in SEQ ID NO: 2; and

(iv) a nucleotide sequence that is complementary to any one of (i) to (iii).

10. A gene construct comprising the isolated nucleic acid of claim 9 in operable connection with a promoter sequence.

11. An isolated GPR56 polypeptide or an immunologically active derivative thereof, substantially free of conspecific proteins.

12. The isolated GPR56 polypeptide of claim 11 comprising an amino acid sequence that is at least 80% identical to SEQ ID NO: 2.

13. The isolated GPR56 polypeptide of claim 12 wherein the percentage identity to SEQ ID NO: 2 is at least about 99%.

14. An isolated GPR56 polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2.

15. An antibody that binds to the isolated polypeptide of claim 11.

16. A nucleic acid probe for detecting RNA encoding a GPR56 polypeptide in a sample, said probe comprising at least about 20 contiguous nucleotides of the nucleotide sequence set forth in SEQ ID NO: 1 or a complementary nucleotide sequence thereto.

17. The nucleic acid probe of claim 16 comprising a nucleotide sequence selected from the group consisting of:

(i) a nucleotide sequence comprising nucleotide residues 131-1400 of SEQ ID NO: 1;

(ii) a nucleotide sequence comprising nucleotide residues 1423-2239 of SEQ ID NO: 1;

(iii) a nucleotide sequence comprising nucleotide residues 2264-2282 of SEQ ID NO: 1; and

(iv) a nucleotide sequence comprising about 20-30 contiguous nucleotides of any one of (i) through (iv).

18. A nucleic acid probe comprising a nucleotide sequence selected from the group consisting of:

(i) the sequence set forth in SEQ ID NO: 11;

(ii) the sequence set forth in SEQ ID NO: 12; and

(iii) the sequence set forth in SEQ ID NO: 13.

19. The nucleic acid probe of claim 16 comprising a nucleotide sequence selected from the group consisting of:

(i) a nucleotide sequence that is complementary to nucleotide residues 131-1400 of SEQ ID NO: 1;

(ii) a nucleotide sequence that is complementary to nucleotide residues 1423-2239 of SEQ ID NO: 1;

(iii) a nucleotide sequence that is complementary to nucleotide residues 2264-2282 of SEQ ID NO: 1; and

(iv) a nucleotide sequence comprising at least 20 contiguous nucleotides of any one of (i) through (iv).

20. A nucleic acid probe comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, and SEQ ID NO: 19.

21. A method for detecting a cancer cell in a subject, said method comprising:

(i) determining the level of GPR56 mRNA expressed in a test sample from said subject; and

(ii) comparing the level of GPR56 mRNA determined at (i) to the level of GPR56 mRNA expressed in a comparable sample from a healthy or normal individual,

wherein a level of GPR56 mRNA at (i) that is enhanced in the test sample relative to the comparable sample from the normal or healthy individual is indicative of the presence of a cancer cell in said subject.

22. The method of claim 21 wherein the cancer is a carcinoma.

23. The method of claim 22 wherein the carcinoma is a carcinoma of a tissue selected from the group consisting of: prostate, omentum, ovary, liver, placenta, and brain.

24. The method of claim 21 wherein the samples comprise cells derived from a tissue or selected from the group consisting of: ovary, prostate, kidney, uterus, placenta, cervix, omentum, rectum, brain, bone, lung, lymph, and blood, or urine, semen, abdominal fluid, or serum, or a cell preparation or nucleic acid preparation derived therefrom.

25. A method for detecting ovarian cancer or a metastases thereof in a subject, said method comprising:

(i) determining the level of GPR56 mRNA expressed in a test sample from said subject; and

(ii) comparing the level of GPR56 mRNA determined at (i) to the level of GPR56 mRNA expressed in a comparable sample from a healthy or normal individual,

wherein a level of GPR56 mRNA at (i) that is enhanced in the test sample relative to the comparable sample from the normal or healthy individual is indicative of the presence of ovarian cancer or a metastases thereof in said subject.

26. The method of claim 25 comprising:

(i) hybridizing a GPR56 probe to GPR56-encoding RNA in both the test sample and the comparable sample from the normal or healthy individual under at least low stringency hybridization conditions;

(ii) detecting the hybridization using a detection means; and

(iii) comparing the hybridization signals produced for each sample.

27. The method of claim 25 wherein the sample comprises serum or abdominal fluid, or a tissue selected from the group consisting of: ovary, lymph, lung, liver, brain, placenta, brain, and omentum.

28. The method of claim 25 wherein the sample comprises cells from the ovary or ovarian surface epithelium or cells from the omentum.

29. The method of claim 26 wherein the probe is labeled and the detection means comprises detecting said label following hybridization.

30. The method of claim 29 wherein the GPR56 probe comprises a nucleotide sequence complementary to SEQ ID NO: 1.

31. The method of claim 29 wherein the GPR56 probe comprises a nucleotide sequence selected from the group consisting of: SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, and SEQ ID NO: 19.

32. The method of claim 26 wherein the detection means comprises reverse transcription polymerase chain reaction (RT-PCR).

33. The method of claim 32 wherein one or more sense GPR56 probes comprises a nucleotide sequence selected from the group consisting of SEQ ID No: 11, SEQ ID NO: 12, and SEQ ID NO: 13.

34. The method of claim 32 wherein one or more antisense GPR56 probes comprises a nucleotide sequence selected from the group consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, and SEQ ID NO: 19.

35. A method for determining an effector memory T cell response in a subject, said method comprising:

(i) determining the level of GPR56 mRNA expressed in a test sample from said subject; and

(ii) comparing the level of GPR56 mRNA determined at (i) to the level of GPR56 mRNA expressed in a comparable sample from a healthy or normal individual,

wherein a level of GPR56 mRNA at (i) that is enhanced in the test sample relative to the comparable sample from the normal or healthy individual is indicative of an effector memory T cell response in the subject.

36. The method of claim 35 wherein the effector memory T cell response is indicative of inflammatory disease or inflammation in the subject.

37. A method for determining whether or not a subject has been re-infected with an infectious agent, said method comprising:

(i) determining the level of GPR56 mRNA expressed in a test sample from said subject; and

(ii) comparing the level of GPR56 mRNA determined at (i) to the level of GPR56 mRNA expressed in a comparable sample from a healthy or normal individual,

wherein a level of GPR56 mRNA at (i) that is enhanced in the test sample relative to the comparable sample from the normal or healthy individual is indicative of re-infection in the subject.

38. A method for determining the presence of effector memory T cells in a test sample, said method comprising:

(i) hybridizing a GPR56 probe to GPR56-encoding RNA in the test sample under at least low stringency hybridization conditions; and

(ii) detecting the hybridization using a detection means,

wherein said hybridization is indicative of the presence of an effector memory T cell in said test sample.

39. The method of claim 38 wherein the test sample comprises blood or whole serum or a fraction thereof comprising T cells.

40. The method of claim 38 wherein the test sample comprises peripheral blood mononuclear cells (PBMC).

41. A process for counting effector memory T cells in a subject comprising performing the method of claim 38 on a sample from said subject and normalizing the hybridization signal to determine T cell count.

42. A method for detecting a cancer cell in a subject, said method comprising:

(i) determining the level of a GPR56 polypeptide in a test sample from said subject; and

(ii) comparing the level of GPR56 polypeptide determined at (i) to the level of said GPR56 polypeptide in a comparable sample from a healthy or normal individual,

wherein a level of said GPR56 polypeptide at (i) that is enhanced in the test sample relative to the comparable sample from the normal or healthy individual is indicative of the presence of a cancer cell in said subject.

43. The method of claim 42 wherein the level of GPR56 polypeptide is determined by a process comprising:

(i) contacting a sample with an antibody that binds to a GPR56 polypeptide under conditions sufficient for binding to occur; and

(ii) determining the binding.

44. A method for determining whether or not a subject has been re-infected with an infectious agent, said method comprising:

(i) determining the level of a GPR56 polypeptide in a test sample from said subject; and

(ii) comparing the level of the GPR56 polypeptide determined at (i) to the level of said GPR56 polypeptide in a comparable sample from a healthy or normal individual,

wherein a level of said GPR56 polypeptide at (i) that is enhanced in the test sample relative to the comparable sample from the normal or healthy individual is indicative of re-infection in the subject.

45. The method of claim 44 wherein the level of GPR56 polypeptide is determined by a process comprising:

(i) contacting a sample with an antibody that binds to a GPR56 polypeptide under conditions sufficient for binding to occur; and

(ii) determining the binding.

46. A method for determining the presence of effector memory T cells in a test sample, said method comprising:

(i) contacting said sample with an antibody that binds to a GPR56 polypeptide under conditions sufficient for binding to occur; and

(ii) determining the binding.

wherein binding of the antibody to the test sample is indicative of the presence of an effector memory T cell in said test sample.